California State University, Sacramento College of Education Department of Teacher Education Syllabus: EDTE 101A/B Tutoring Children in Mathematics 3(2 + 1) units Dr. Rita M. Johnson Office 321 A Eureka

<u>GENERAL COURSE GOALS:</u> The NCTM (National Council of Teachers of Mathematics) states, "A major goal of mathematics is to help children develop the belief that they have the power to do mathematics. This autonomy develops and grows as children gain confidence and learn that mathematics is not simply memorizing rules and procedures but that mathematics makes sense, is logical, and is enjoyable." Knowing mathematics involves doing mathematics. The goal of this course is to provide opportunities for undergraduate students to develop knowledge, skills and dispositions that will enable them identify and remediate student difficulties with mathematics and to pass along an enjoyment and confidence in mathematics to the students they tutor.

Expected Outcomes:

- 1. Candidates will be able to demonstrate an understanding of the state-adopted academic content standards reflecting the current California Mathematics Framework.
- 2. Candidates will be able to understand and effectively use materials, methods, and strategies for all students (i.e. ELD, special needs, gifted), providing them access to the core curriculum and beyond.
- 3. Candidates will be able to help students solve real-world problems using mathematical reasoning and concrete, verbal, symbolic, and graphic representations.
- 4. Candidates will be introduced to and create a mathematical teaching/learning environment that uses a variety of teaching strategies which address access, equity and the importance of the student's family and cultural backgrounds and experiences in relation to mathematics education in California.
- 5. Candidates will be able to acquire a set of mathematics activities and resources to work with students of diverse abilities.
- 6. Candidates will become familiar with the concepts of pacing, level of student involvement, checking for understanding, and mastery versus performance learning.
- 7. Candidates will demonstrate the ability to select, administer, and interpret informal assessment tool(s) to assess student's understanding of mathematics, including appropriate measures for initial, progress monitoring, and summative assessment of English learners for math content knowledge.
- Candidates will be able to understand and effectively use systematic instructional strategies designed to make grade-8. appropriate or advanced math curriculum content comprehensible to English learners.

Course Requirements:

- Students must submit a negative tuberculosis test and fingerprint screening prior to orientation at the school site. 1 (Students convicted of drug, violence, or sex crimes are prohibited from participation in this course.) The student will attend all class and tutoring sessions and participate seriously and spontaneously in class
- 2. discussions and tutoring experiences.
- The student will pass a competency exam in mathematics tutoring concepts and content prior to beginning the field 3. practicum. The passing minimum is 75%.
- 4. The student will prepare a tutoring plan and appropriate materials each week for the 11/12 weeks of the practicum, which must be ready to view in advance of the tutoring session.

Required Texts: *available in the CSUS student bookstore

1. Required: SECOND EDITION- Teaching Mathematics to All Children: Designing and Adapting Instruction to Meet the Needs of Diverse Learners, 2/e; Author : Tucker, Benny; ISBN : 0-13-027021-0*

Class Times:

Tuesday & Thursday 8:00 - 9:30 a.m. (DH 207), first 3-4 weeks, then off campus (7:30 - 9 am) for 10-11 weeks

Gradina:

Class and lab are C/NC It is based upon completion of assignments and attendance at classes/tutoring sessions.

Veek No.	Date		Class Location	Due this Day:
	Tuesday 9/5			
1	Thursday 9/7		CSUS	
2	Tuesday 9/12	Introduction/Learning Styles/Base 10	On Campus 8 - 9:30 a.m.	
	Thursday 9/14	Base 10 continued		Read in Tucker: pp 65-74
3	Tuesday 9/19	More Base 10 games/math facts		Read in Tucker: pp 75 - 89
	Thursday 9/21	Assessments, math facts; Lesson planning		Choose one game/activity and prepa for two students
4	Tuesday 9/26	Tutoring Proficiency Exam in Class		Fingerprint and TB test results du
	Thursday 9/28	Orientation at school site		Tucker Chap. 10 (relevant parts)
5	Tuesday 10/3	Student interview/general facts assessment/play a game	Cordova Meadows Elementary School 7:30 - 9:00 a.m. Working with students from 7:45 - 8:45	Plan an interview questions, assessment. and game.
	Thursday10/5	Plan for drill of facts, practice activity, game		Attendance and progress char set up for each student
6	Tuesday 10/10	Plan for assessment; practice/ game		
	Thursday10/12	Plan for assessment; practice/ game		
7	Tuesday 10/17	Plan for assessment; practice/ game		Tucker Chap. 11(relevant parts)
	Thursday 10/19	Plan for assessment; practice/ game		
8	Tuesday 10/24	Plan for assessment; practice/ game		
	Thursday 10/26	Plan for assessment; practice/ game		
9	Tuesday 10/31	Plan for assessment; practice/ game	Meet with Rita	
	Thursday 11/2	Plan for assessment; practice/ game	7:30-7:45 and 8:45 - 9:00	Midterm reflection due
10	Tuesday 11/7	Plan for assessment; practice/ game		
	Thursday 11/9	Plan for assessment; practice/ game		
11	Tuesday 11/14	Plan for assessment; practice/ game		
	Thursday 11/16	Plan for assessment; practice/ game		
12	Tuesday 11/28	Plan for assessment; practice/ game		
	Thursday 11/30	Plan for assessment; practice/ game		
13	Tuesday 12/5	Plan for assessment; practice/ game		
	Thursday 12/7	Plan for assessment; practice/ game		
14	Tuesday 12/12	Wrap up with student		Final Student assessment due
	Thursday 12/14	Celebration		Final Course Reflection due

<u>Credit/No Credit</u> More than 2 absences will result in No Credit for the class.

Late Work is not accepted.

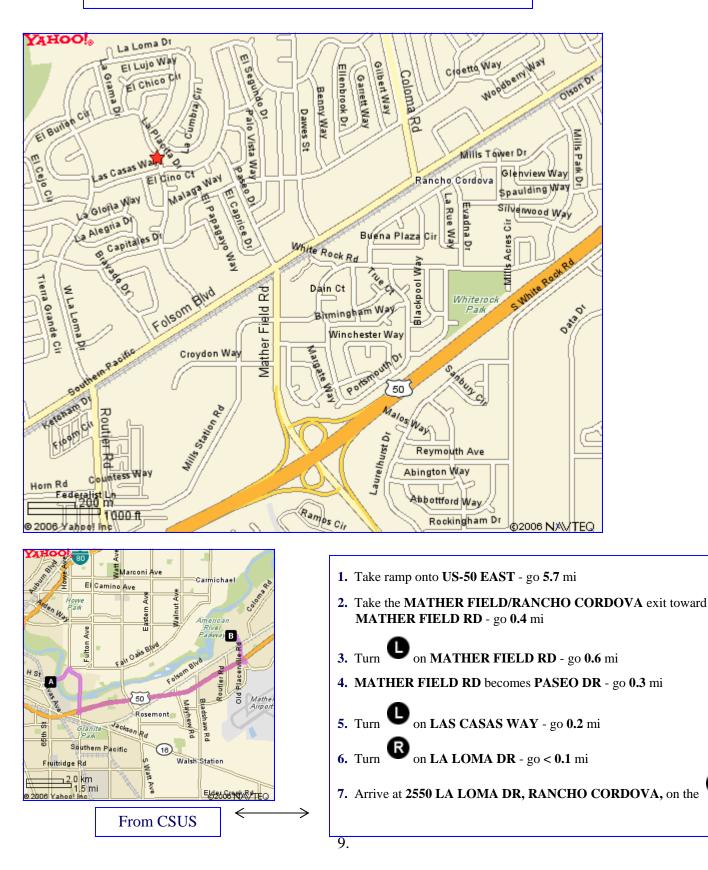
<u>Notification of Special Needs</u>: Consistent with University policy, students must file a form with the Students and Disabilities Office and provide the instructor of all classes with a copy of the form by the end of the 2nd week of classes. In this way, we can accommodate the needs of students with disabilities.

Incompletes: Please note that a grade of Incomplete must be awarded in accordance with University policy-there must be a <u>specific</u>, <u>identifiable course requirement</u> that needs to be met <u>due to unforeseen but fully justified reasons</u>, and that there is still a possibility of earning credit. Students have two semesters to complete the work. (Fall 2006 inc. due by Dec 18, 2007).

Cordova Meadows Elementary School

2550 La Loma Drive, Rancho Cordova, CA 95670

Phone: 916-393-9406 Principal: Mr. Tony Peterson



10.

11

Mathematics Content Standards indergarten

e end of kindergarten, students understand small numbers, quantities, and simple es in their everyday environment. They count, compare, describe and sort objects, and op a sense of properties and patterns.

nber Sense

- Students understand the relationship between numbers and quantities (i.e., that a set of objects has the same number of objects in different situations regardless of its position or arrangement):
- Compare two or more sets of objects (up to 10 objects in each group) and 1.1 identify which set is equal to, more than, or less than the other.

Are there more circles or more triangles in the following collection?



Count, recognize, represent, name, and order a number of objects 1.2 (up to 30).

Which numbers are missing?

11, 12, 13, ___, __, 16, 17, __, __, 21, 22, 23, 24.

Know that the larger numbers describe sets with more objects in them than 1.3 the smaller numbers have.

Students understand and describe simple additions and subtractions:

Use concrete objects to determine the answers to addition and subtraction 21 problems (for two numbers that are each less than 10).

Pair up as many groups of beans from the left column with groups of beans from the right column so that each group adds up to 10 beans.

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Number Sense (Continued)

- 3.0 Students use estimation strategies in computation and problem solving that involve numbers that use the ones and tens places:
 - Recognize when an estimate is reasonable. 3.1

Algebra and Functions

1.0 Students sort and classify objects:



1.1 Identify, sort, and classify objects by attribute and identify objects that do not belong to a particular group (e.g., all these balls are green, those are red).

Students compare objects:

1. Which pencil is longer? Shorter?



2. Describe how the following 2 objects are the same or different.



3. Show students buttons sorted into 3 sets as shown and ask them to identify how buttons were sorted.



Downloaded from the following site: http://www.cde.ca.gov/re/pn/fd/documents/mathematics-

Statistics, Data Analysis, and Probability

- Students collect information about objects and events in their environment:
- Pose information questions; collect data; and record the results using objects, pictures, and picture graphs.
- 1.2 Identify, describe, and extend simple patterns (such as circles or triangles) by referring to their shapes, sizes, or colors.

Mathematical Reasoning

- 1.0 Students make decisions about how to set up a problem:
- Determine the approach, materials, and strategies to be used.
- 1.2 Use tools and strategies, such as manipulatives or sketches, to model problems.
- 2.0 Students solve problems in reasonable ways and justify their reasoning:
- 2.1 Explain the reasoning used with concrete objects and/or pictorial representations.
- 2.2 Make precise calculations and check the validity of the results in the context of the problem.

In a bag there are 4 apples, 3 oranges, 5 bananas, and 3 poratoes. How many pieces of fruit are in the bag alrogether? How many different kinds of fruit are in the bag? How many objects alrogether are in the bag?

asurement and Geometry

Students understand the concept of time and units to measure it; they understand that objects have properties, such as length, weight, and capacity, and that comparisons may be made by referring to those properties:

1.1 Compare the length, weight, and capacity of objects by making direct comparisons with reference objects (e.g., note which object is shorter, longer, taller, lighter, heavier, or holds more).

Which container bolds more? Which container holds more?

1.2 Demonstrate an understanding of concepts of time (e.g., morning, afternoon, evening, today, yesterday, tomorrow, week, year) and tools that measure time (e.g., clock, calendar).

I left home at 9 o'clock in the morning and came back 4 hours later. Did I come home in the morning or in the afternoon?

- 1.3 Name the days of the week.
- 1.4 Identify the time (to the nearest hout) of everyday events (e.g., lunch time is 12 o'clock; bedtime is 8 o'clock at night).

Seometric features: Seometric features:

2.1 Identify and describe common geometric objects (e.g., citcle, triangle, square, retangle, cube, sphere, cone).

Which of these is a square?



Given 5 squares of the same size, can you make use of some or all of them to form a bigger square?



 Compare familiar plane and solid objects by common attributes (e.g., position, shape, size, roundness, number of corners).



Grade One Mathematics Content Standards

y the end of grade one, students understand and use the concept of ones and tens in he place value number system. Students add and subtract small numbers with ease. They heasure with simple units and locate objects in space. They describe data and analyze and olve simple problems.

lumber Sense

- .0 Students understand and use numbers up to 100:
 - U

Count, read, and write whole numbers to 100.

Compare and order whole numbers to 100 by using the symbols for less than, equal to, or greater than (<, =, >).

Which of the following are correct and which are incorrect?

(a) 75 > 76 (b) 48 < 42 (c) 89 > 91

(d) 59 < 67 (e) 34 = 33

- 1.3 Represent equivalent forms of the same number through the use of physical models, diagrams, and number expressions (to 20) (e.g., 8 may be represented as 4 + 4, 5 + 3, 2 + 2 + 2 + 2, 10 2, 11 3).
- 1.4 Count and group object in ones and tens (e.g., three groups of 10 and 4 equals 34, or 30 + 4).

A certain brand of chewing gum has 10 pieces in each pack. If there are 14 students, what is the smallest number of packs we must buy to make sure each student gets at least one piece of gum? If there are 19 students? What about 21 students?

There are 5 quarters, 9 dimes, 3 nickels, and 8 pennies. They are supposed to be put in piles of ten (coins). How many such piles can be formed by all these coins, and how many are left over?

1.5 Identify and know the value of coins and show different combinations of coins that equal the same value.

I have some pennies, nickels, and dimes in my pocket. I reach in and pull out three coins. How much money might I have? List all the possibilities.

Number Sense (Continued)

- 2.0 Students demonstrate the meaning of addition and subtraction and use these operations to solve problems:
 - 2.1 Know the addition facts (sums to 20) and the corresponding subtraction fact and commit them to memory.

I had 10 cupcakes, but I ate 3 of them. How many cupcakes do I have left? How many if I had 18 and ate 5?

- Use the inverse relationship between addition and subtraction to solve problems.
- 2.3 Identify one more than, one less than, 10 more than, and 10 less than a given number.
- 2.4) Count by 2s, 5s, and 10s to 100.

Which numbers are missing?

24, 26, 28, 30, __, __, 36, __, 40, 42, 44, __, __, 50

15, 20, 25, 30, __, __, 45, __, 55, 60, __, 70, __, 80

- 2.5 Show the meaning of addition (putting together, increasing) and subtraction (taking away, comparing, finding the difference).
- 2.6 Solve addition and subtraction problems with one- and two-digit numbers (e.g., 5 + 58 = __).

Figure out how many pages I have read so far this week if I read 16 pages on Monday, 9 pages on Tuesday, none on Wednesday, and 7 pages on Thursday.

- 2.7 Find the sum of three one-digit numbers.
- 3.0 Students use estimation strategies in computation and problem solving that involve numbers that use the ones, tens, and hundreds places:
 - 3.1 Make reasonable estimates when comparing larger or smaller numbers.

Algebra and Functions

- 0 Scudents use number sentences with operational symbols and expressions to solve problems:
- Write and solve number sentences from problem situations that express relationships involving addition and subtraction.

Do the following problems in succession:

- Marie had some pencils in her desk. She put 5 more in her desk. Then she had 14. How many pencils did she have in her desk to start with?
- Eddie had 14 helium balloons. A number of them floated away. He had 5 left. How many did he lose?
- Nina had 14 seashells. That was 5 more than Pedro had. How many seashells did Pedro have?
- 4. 5 + () = 6? () + 12 = 14?
- .= ,- ,+ slodmys of the symbols +, -, =,
- 1.3 Creare problem situations that might lead to given number sentences involving addition and subtraction.

Aeasurement and Geometry

- .0 Students use direct comparison and nonstandard units to describe the measurements of objects:
- Compare the length, weight, and volume of two or more objects by using direct comparison or a nonstandard unit.

Measure your desk by using the length of a ballpoint pen. How many ballpoint pens would be roughly equal to the length of your desk? The width of your desk? Which is longer?

- 1.2 Tell time to the nearest half hour and relate time to events (e.g., before/after, shorter/longer).
- 0 Students identify common geometric figures, classify them by common attributes, and describe their relative position or their location in space:
- 2.1 Identify, describe, and compare triangles, rectangles, squares, and circles, including the faces of three-dimensional objects.

Describe the shape of a page in your textbook and compare it to the face of the clock on the wall.

Measurement and Geometry (Continued)

- 2.2 Classify familiar plane and solid objects by common artributes, such as color, position, shape, size, roundness, or number of corners, and explain which artributes are being used for classification.
- 2.3 Give and follow directions about location.

Here are pictures on a table of a ball, a girl, a horse, and a cat. Arrange them according to these directions:

- 1. Put the picture of the ball above the picture of the horse.
- 2. Put the picture of the girl on top of the picture of the horse.
- 3. Put the picture of the cat under the picture of the horse.
- 2.4 Artange and describe objects in space by proximity, position, and direction (e.g., near, far, below, above, up, down, behind, in front of, next to, left or right of).

Statistics, Data Analysis, and Probability

- 3.0 Students organize, represent, and compare data by category on simple graphs and charts:
- Sort objects and data by common attributes and describe the categories.
- Represent and compare data (e.g., largest, smallest, most often, least often)
 Dy using pictures, bat graphs, tally charts, and picture graphs.
- 2.0 Students sort objects and create and describe patterns by numbers, shapes, as sizes, rhythms, or colors:

Describe, extend, and explain ways to get to a next element in simple repeating patterns (e.g., thythmic, numeric, color, and shape).

Brinoses Restoning

- 1.0 Students make decisions about how to set up a problem:
- Determine the approach, materials, and strategies to be used.
- 1.2 Use tools, such as manipulatives or sketches, to model problems.
- 2.0 Students solve problems and justify their reasoning:
- Explain the reasoning used and justify the procedures selected.
- 2.2 Make precise calculations and check the validity of the results from the context of the problem.
- 3.0 Students note connections between one problem and another.

Mathematics Content Standards Grade Two

By the end of grade two, students understand place value and number relationships in addition and subtraction, and they use simple concepts of multiplication. They measure quantities with appropriate units. They classify shapes and see relationships among them by paying attention to their geometric attributes. They collect and analyze data and verify the answers.

Number Sense

- Students understand the relationship between numbers, quantities, and place 1.0value in whole numbers up to 1,000:
 - 1.1 Count, read, and write whole numbers to 1,000 and identify the place value for each digit.
 - Use words, models, and expanded forms (e.g., 45 = 4 tens + 5) to represent 1.2 numbers (to 1,000).

Kelly has 308 stickers. How many sets of hundreds, tens, and ones does she have?

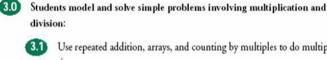
- 1.3 Order and compare whole numbers to 1,000 by using the symbols <, =, >.
- Students estimate, calculate, and solve problems involving addition and subtrac-2.0tion of two- and three-digit numbers:
 - (2.1) Understand and use the inverse relationship between addition and subtraction (e.g., an opposite number sentence for 8 + 6 = 14 is 14 - 6 = 8) to solve problems and check solutions.
 - (2.2) Find the sum or difference of two whole numbers up to three digits long.

Use drawings of tens and ones to help find the sum 37 + 17 and the difference 25 - 19. Now do the same problems again using addition and subtraction algorithms.

2.3 Use mental arithmetic to find the sum or difference of two two-digit numbers.

In a game, Mysong and Naoki are making addition problems. They make two 2-digit numbers out of the four given numbers 1, 2, 3, and 4. Each number is used exactly once. The winner is the one who makes two numbers whose sum is the largest. Mysong had 43 and 21, while Naoki had 31 and 24. Who won the game? How do you know? Show how you can beat both Mysong and Naoki by making up two numbers with a larger sum than either (Adapted from TIMSS, gr. 4, V-4). (This problem also supports Mathematical Reasoning Standard 1.0.)

Number Sense (Continued)



Use repeated addition, arrays, and counting by multiples to do multiplication.

Draw a simple picture of seating 30 people in rows of 10. Show and explain how this is related to multiplication. Do this also for rows of 3, and again for rows of 5.

3.2

Use repeated subtraction, equal sharing, and forming equal groups with remainders to do division.

Kim decides to store away his marbles. He knows there are bags that hold u to 10 marbles in each. Kim has 38 marbles, and he tries to spend money on as few bags as he can. How many bags does he have to buy? How many if h has 51 marbles? (Keep in mind that there is no such thing as "half a bag" or "part of a bag.")



Know the multiplication tables of 2s, 5s, and 10s (to "times 10") and commit them to memory.

Students understand that fractions and decimals may refer to parts 4.0 of a set and parts of a whole:

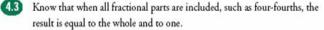
Recognize, name, and compare unit fractions from 1/12 to 1/2. 4.1

True or false?

1. One-fourth of a pie is larger than one-sixth of the same pie.

- 2. 1/4 > 1/3
- 3. 1/7 < 1/9

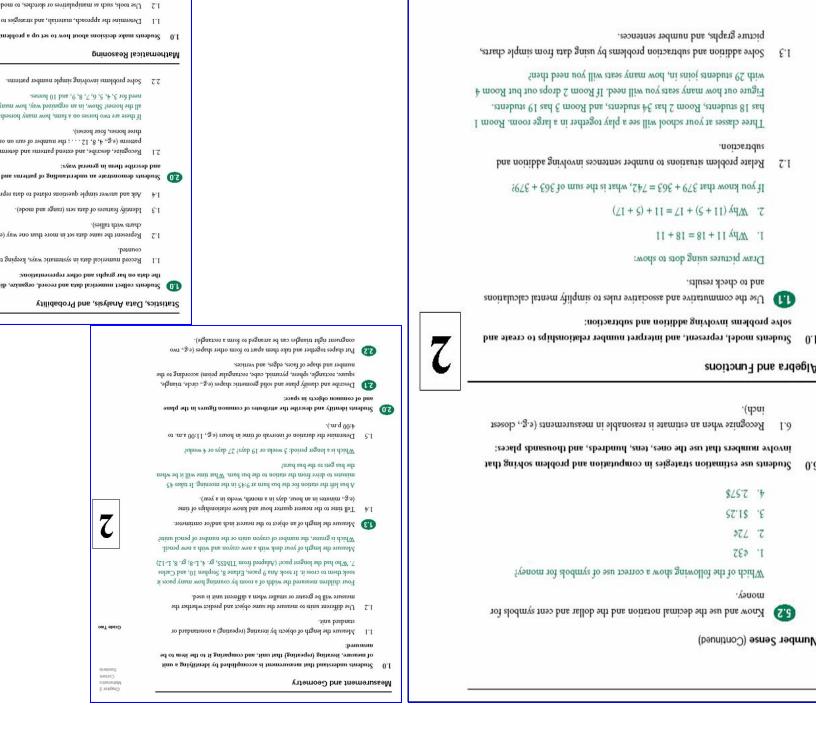
Recognize fractions of a whole and parts of a group (e.g., one-fourth of a pi two-thirds of 15 balls).



5.0 Students model and solve problems by representing, adding, and subtracting amounts of money:

5.1 Solve problems using combinations of coins and bills.

> Lee has a wallet with 5 nickels, 9 dimes, and dollar bills. In how many ways can he pay with correct change for a pen worth \$1.15? What about one worth 65 cents?



3.0 Students note connections between one problem and an

0.6 Students solve problems and justify their reasoning: 1.1 Defend the reasoning used and justify the procedure 2.2 Make procise calculations and check the validity of th 2.2

of the problem.

. Instructions for completing the *Request for Live Scan Service* form:

1. Print two (2) copies of the *Request For Live Scan Service* Form 41-LS (see next pages in this document). Complete both copies, printing your full legal name and all other requested information. Use the following abbreviations when completing the hair and eye color requests: BLK (black), BLND (blonde), BL (blue), BRN (brown), GRN (green), GRY (gray), and HZL (hazel).

2. Take the completed forms to an office that conducts the fingerprint Live Scan.

a. In the Sacramento area, the Department of Justice (DOJ) located at 4949 Broadway,

Sacramento, CA, phone (916) 227-3310, the University Police Department on the Sacramento State campus *sometimes* conducts these scans (please call 916-278-6851 for an appointment), or contact your local police/sheriff's department. The Live Scan operator will collect fees at the time your prints are scanned. At this time, the Live Scan fee is approximately \$66.00.

b. If you live outside the Sacramento area, please call the DOJ at (916) 227-3823 for a referral to a Live Scan service operator in your area.

3. After your fingerprints have been scanned, make sure the Live Scan operator has completely filled out the bottom of both Live Scan forms (they will keep one copy).